Operating Instructions

40 kc/s to 50 Mc/s
OSCILLATOR

Type TF 1246

Phone # 567-0607 JL

MARCONI INSTRUMENTS LIMITED, ENGLAND

SUPPLIED AND SERVICED BY:
MARCONI INSTRUMENTS
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ENGLEWOOD N. J.

OPERATING INSTRUCTIONS No. EB 1246

for

40 kc/s to 50 Mc/s OSCILLATOR

TYPE TF 1246

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DRAWINGS	Ref. No.
COMPLETE CIRCUIT DIAGRAM OF OSCILLATOR SECTION	TC 27396
COMPLETE CIRCUIT DIAGRAM OF POWER UNIT SECTION	TC 27437
FUNCTIONAL DIAGRAM	TLB 28414
MAINS INPUT ARRANGEMENTS	TLC 27612/1

SCHEDULE OF PARTS SUPPLIED

1. One Oscillator Type TF 1246 complete with attached mains lead and valves, etc. as under:-

Valves:	Two:	Type 5763, Beam Tetrodes.
	One:	Type 6X4, Full-Wave Rectifier.
	One:	Type 6AK5, Pentode.
	One:	Type 5651, Voltage Stabilizer.
Fuses:	One:	2-amp, Cartridge.
	One:	150-mA, Cartridge.
Lamp:	One:	6.3-volt, 0.15-amp, M.B.C., Pilot Lamp.

2. One Instruction Book No. EB 1246.

The following item is an optional accessory for use with the oscillator and is supplied only if specially ordered.

50-ohm Matching Unit Type TM 5726; enables oscillator to be used as a 50-ohm general-purpose test source.

1 DESCRIPTION

1.1 GENERAL

The 40 kc/s to 50 Mc/s Oscillator Type TF 1246 is primarily intended as a test-circuit energizing source for the Marconi Circuit Magnification Meter Type TF 1245; after the addition of an optional matching unit, it can also be used as a general-purpose wide-band oscillator for such applications as energizing an r.f. bridge.

To suit the Circuit Magnification Meter, the output circuit of the Oscillator is designed to operate into a resistive load of 0.5 ohm, across which it will develop an output variable up to about 600 mV. However, so that the use of the Oscillator is not limited to this specialized application, an optional Matching Unit, Type TM 5726, is available to convert its low output impedance to a nominal 50 ohms; with the matching unit connected, the maximum output across a 50-ohm load is variable up to approximately 4 volts.

In its normal application the output of the Oscillator is monitored by the Q-Multiplier meter of the Circuit Magnification Meter; for this reason, no monitoring arrangements are included in the Oscillator itself.

1.2 DESIGN DETAILS

The general arrangement of the electrical circuit is shown on the Functional Diagram No. TLB 28414; the complete Circuit Diagram of the oscillator section is given on Drawing No. TC 27396 and of the power unit section on Drawing No. TC 27437.

Reference to these diagrams should assist the reader in fully understanding the circuit description in this section.

1.2.1 Oscillator Circuit

The output frequency is generated by a single-valve oscillator circuit incorporating a beam tetrode valve, V101. The frequency coverage, 40 kc/s to 50 Mc/s, is divided into eight ranges; the appropriate range is selected by means of a front-panel control coupled to a turret on which are mounted the tuning inductors, L103 to L110, and their associated components. Tuning over each range is accomplished by means of capacitor C105.

The screen and anode of V101 are both bypassed to chassis, and the valve functions as a grounded-anode triode oscillator. On the four lowest ranges (up to 2.5 Mc/s), the circuit is of an inverted-Hartley type. Over the fifth and sixth ranges (2.5 to 14 Mc/s) a tuned-cathode

1.2.1 (continued)

circuit is used, with inductive feedback to the valve grid, so that the impedance presented in the cathode circuit is sufficient to maintain maximum efficiency. Above 14 Mc/s, the maximum efficiency is maintained again by the use of a Modified-Hartley circuit, but with the effective value of tuning capacitance reduced by the connection of a fixed capacitor in series with C105.

1.2.2 Output Arrangements

Although, with respect to r.f. voltages, the anode and screen of V101 are coupled together, a stabilized d.c. voltage is applied separately to the screen via a variable potentiometer, RV101. By adjustment of the screen d.c. potential, the current through the valve, and therefore the level of oscillation, can be determined. The screen voltage control - designated OUTPUT LEVEL - is uncalibrated. Output level is monitored by a voltmeter on the TF 1245 Circuit Magnification Meter.

The load which terminates the Oscillator output, i.e., the input resistance of the TF 1245, is 0.5 ohm. The impedance coupled into the oscillator tuned circuit is, however, largely reactive. This is due to (i) the secondary self-inductance and (ii) the fact that, for convenience, an unmatched 50-ohm connecting cable is used. If the effect of coupled impedance is allowed to vary, then the frequency of oscillation will also vary. Therefore it will be seen that the frequency calibration will only be accurate if the correct load is connected to the Oscillator. To ensure that this is always the case, the Circuit Magnification Meter is provided

AMENDMENT

Section 1.2.2

When the oscillator is used with the Matching Unit, TM 5726, the frequency accuracy is maintained for outputs of up to 1 volt r.m.s.; for outputs above 1 volt, calibration accuracy is maintained only at frequencies above 200 kc/s.

1.2.3 Power Supply Circuit

The mains transformer has a double-wound primary which is tapped to allow operation from mains supplies within the ranges 100 to 150 volts and 200 to 250 volts.

The oscillator h.t. and l.t. are derived from a built-in power unit. The anode voltage for the oscillator valve is taken from the cathode of the full-wave rectifier, capacitance smoothed, and applied direct to the anode of the valve. The screen supply is stabilized by a series-regulator circuit before application to the screen voltage - OUTPUT LEVEL - potentiometer, which controls the oscillator output.

The heater voltages for all valves are taken from two 6.3-volt windings on the mains transformer.

2 INSTALLATION

The Oscillator Type TF 1246 is dispatched with all valves in their holders and with its mains-input circuit adjusted for immediate operation from 240-volt, 40- to 100-c/s supplies, unless otherwise specified at the time of ordering.

The instrument can be adjusted for operation from any supply voltage within the ranges 100 to 150 volts and 200 to 250 volts. To check or alter the settings of the mains transformer tappings, refer to Section 2.1 which follows.

2.1 MAINS INPUT ARRANGEMENTS

2.1.1 General

The mains transformer has a double-wound primary, and its two tapped sections are connected in series-parallel for 100- to 150-volt operation, or in series for 200- to 250-volt operation.

The mains input to the transformer is carried on two fly-leads connected by screws to a mains tapping panel. Attached to the tapping panel is a pierced reference plate which is reversible and marked with a selection of voltages. One one side of the plate, the voltages are applicable to the 100- to 150-volt range; on the other side to the 200- to 250-volt range.

The two main sections of the primary are connected together by a link or links; these links are used to join the appropriate solder-tag terminals which are mounted directly on the transformer coil. To change from one major voltage range to the other, the linking between the transformer tags is altered; to change by an increment within one of the major voltage ranges, the position of the screw-secured fly-leads on the tapping panel is altered. Diagram TLC 27612/1, included after page 8, shows, in schematic form, the method of adjusting the mains transformer.

The fly-lead connections to the mains tapping panel can be viewed through a transparent plastic cover on the rear case panel. To gain access to the tapping panel, release the single captive screw which secures the cover to the case panel.

To examine the link connections on the transformer coil, remove the rear case panel as follows: detach the two screws holding the panel to the back of the instrument; detach the two screws on the underside at the rear of the instrument. The panel can then be removed and the transformer will be seen mounted adjacent to the mains tapping panel.

2.1.2 Operation From 200- to 250-volt, 40- to 100-c/s Supplies

To adjust the instrument to operate from 200- to 250-volt supplies, connect the link of the transformer coil as shown in Fig. 1 of TLC 27612/1. Then adjust the fly-lead connections, as necessary, to suit the local Supply voltage.

2.1.3 Operation From 100- to 150-volt, 40- to 100-c/s Supplies

To adjust the instrument to operate from 100- to 150-volt supplies, connect the links on the transformer coil as shown in Fig. 2 of TLC 27612/1. Then adjust the fly-lead connections, as necessary, to suit the local Supply voltage.

3 OPERATION

3.1 SWITCHING ON AND WARMING UP

Be sure that the instrument is correctly adjusted to suit the particular supply to which it is to be connected. Then proceed as follows:-

(1) Connect the mains lead to a supply socket. The lead is permanently attached to the instrument and is cleated, when not in use, by two spring clips on the rear case-panel.

(2) Switch ON by means of the SUPPLY switch. The pilot lamp should now glow.

Before proceeding further, wait two or three minutes for the valves and internal circuits to warm up. If a very high order of stability is required, extend this period to approximately half an hour.

3.2 SETTING OUTPUT FREQUENCY AND LEVEL

3.2.1 Tuning

The Oscillator covers frequencies from 40 kc/s to 50 Mc/s in eight ranges as follows:

RANGE	FREQUENCY COVERAGE
A	40 to 80 kc/s
B	80 to 250 kc/s
C	250 to 800 kc/s
D	800 to 2,500 kc/s
E	2.5 to 6.0 Mc/s
F	6 to 14 Mc/s
G	14 to 30 Mc/s
H	30 to 50 Mc/s

To set the Oscillator to a particular frequency: switch the RANGE control to the required range; tune to the desired frequency; and read the frequency on the tuning-dial calibration-arc appropriate to the RANGE setting selected.

It should be remembered that the frequency calibration is only accurate, for reasons explained in Section 1.2.2, when the output is correctly terminated. For details of output termination, refer to Sections 3.3 and 3.4.

NOTE: The black dots on the tuning dial denote those frequencies at which the Capacitance-Inductance Conversion Chart on the Q-Meter may be used.

3.2.2 Adjusting Output Level

Adjust the uncalibrated OUTPUT LEVEL control to give an output level suitable for application to associated equipment. The output can be applied to (i) the Marconi Circuit Magnification Meter TF 1245, or (ii) a 50-ohm load. These applications and the output levels available are discussed in Sections 3.3 and 3.4 respectively.

3.3 USE WITH CIRCUIT MAGNIFICATION METER TF 1245

The main function of this Oscillator is to provide a test-circuit energizing voltage for the Circuit Magnification Meter TF 1245, and, in this role, may be considered as an integral part of that instrument. Therefore, it has been found expedient to include the relevant operational procedure for the Oscillator in the handbook for the Circuit Magnification Meter.

When used with the TF 1245, the Oscillator output level is continuously variable up to a maximum of about 600 mV. This full-output level enables the maximum Q-reading multiplication factor of x0.9 to be attained adequately.

3.4 USE AS A 50-OHM SOURCE

In addition to its use with the TF 1245, the Oscillator can be employed as a general-purpose test source having a nominal output impedance of 50 ohms. To obtain this condition, it is necessary to couple the optional Matching Unit Type TM 5726 to the R.F. OUTPUT socket of the Oscillator.

It should be noted that, with the Matching Unit connected, the Oscillator is arranged to work into a 50-ohm load. If it is required to feed the Oscillator into any other value of load resistance, first match the load to within at least ±10 ohms of 50 ohms by the addition of a series or parallel resistance.

With a 50-ohm load connected to the Matching Unit output socket, the voltage developed across the load is continuously variable from zero to a maximum of approximately 4 volts.

The Matching Unit has a 50-ohm BNC socket. Listed below are reference numbers given by several authorities and manufacturers to some of the BNC plugs which will fit the outlet.

Great Britain,	Air Ministry:	10H/20935
	Films and Equipments Ltd.:	UG-88/U
		UG-913/U
	Belling and Lee Ltd.:	L.1331/FP
		L.1331/RFP
	Transradio Ltd.:	BN.1/5
		BN.7/5
United States,	Military No.:	UG-88/U
		UG-913/U

4 MAINTENANCE

4.1 FUSES

The Oscillator is protected by two fuses. One is in series with the mains transformer primary and the other is in the h.t. secondary centre-tap line. Both are standard 1-inch long, 1/4 inch diameter cartridge fuses. The fuse in the primary is rated at 2 amps, and the fuse in the h.t. secondary at 150 mA. Both fuses are accessible at the rear of the instrument and can be replaced without removing the rear case-panel.

4.2 ACCESS TO COMPONENTS

4.2.1 General

The valves may normally be replaced without special selection. The power-supply valves, V1 to V4, are immediately accessible on removing the rear case-panel as described in Section 4.2.2, paragraph (1). The oscillator valve is accessible after removing the oscillator unit cover as described in Section 4.2.3.

4.2.2 Removal of Power Unit

(1) Remove the rear case-panel after detaching four screws; two of the screws hold the panel to the back of the instrument and the remaining two are on the underside at the rear.

(2) Detach the two screws, one on either side of the power unit, which hold the chassis to the main framework of the instrument. The chassis can then be withdrawn.

The unit remains attached to the instrument, however, by the leads soldered to the power-unit connection panel. The length of the leads is sufficient to permit all normal maintenance operations to be carried out. Should it be necessary to remove the unit completely, unsolder the eight leads from the panel; note the cable-form colour sequence for subsequent replacement.

4.2.3 Removal of Oscillator Unit Cover

(1) Remove the power unit as described in Section 4.2.2 but do not unsolder the leads from the power-unit connection panel.

(2) Detach the case top-panel by undoing the four screws holding it to the top of the instrument.

(3) Remove the eight screws, four at the top and four at the bottom, which secure the oscillator-unit cover in position. The cover can then be withdrawn.

4.3 WORKING VOLTAGES

The voltages given in this section, for guidance when servicing the instrument, were obtained from a representative TF 1246; the voltmeter used was an Avometer Model 8, which has a resistance of 20,000 ohms/volt.

All voltages should be measured with the correct supply voltage applied to the appropriate transformer-primary tapping (e.g., 240 volts applied to the 240-volt tap).

All measurements are made with respect to chassis unless otherwise stated.

Mains transformer, h.t. secondary:	350-0-350 V a.c.	
" " LT 1 (between pins 4 and 5 of V2):	6.3 V a.c.	
" " LT 2 (connector panel tag 3)	6.3 V a.c.	
H.T. unstabilized (connector panel tag 2):	350 to 440 V d.c.	*
H.T. stabilized (connector panel tag 1):	245 V d.c.	
V101 anode voltage (pin 1):	110 to 370 V d.c.	*

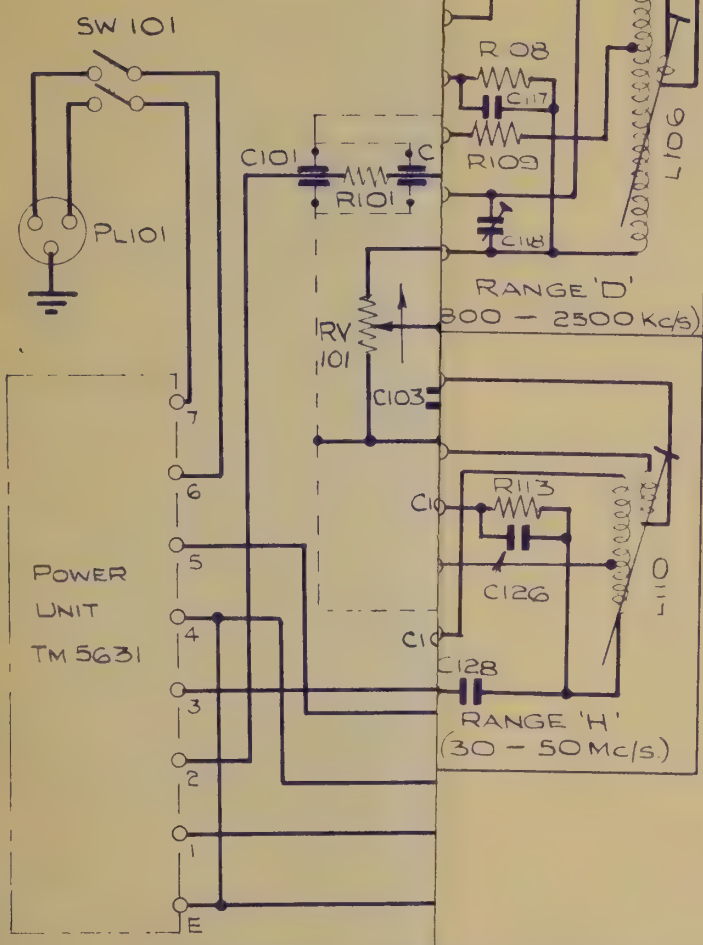
* The level of this voltage will depend on the anode current drawn by the oscillator valve at any particular frequency and r.f. output level. These figures are only included to give guidance as to the expected range.

4.4 ADJUSTMENT OF PRESET CONTROLS

The level of the stabilized h.t. voltage from the power unit is adjusted by potentiometer RV1. With the correct supply voltage applied to the mains inlet, RV1 is set to give 245 V d.c. at connector panel tag 1.

The only other preset controls are the inductors and trimmer capacitors associated with each frequency range. Adjustment of these presets follows normal practice, namely, setting inductance at the low-frequency end of a range and capacitance at the high-frequency end, and is quite straightforward. However, it is important that, for reasons explained in Section 1.2.2, the r.f. output is always correctly terminated. This termination must be either the Circuit Magnification Meter TF 1245 or the optional Matching Unit TM 5726, itself loaded with 50 ohms resistance.

To adjust the inductors and capacitors, first remove the oscillator unit cover as described in Section 4.2.3. To simplify access to the trimmer capacitors, it is advisable to remove the bottom case-panel by un-doing the two remaining screws on the underside of the instrument. The tuning assembly 'in circuit' at any particular setting of the RANGE switch is at the bottom of the turret disk.



REF.	RESISTORS	
R101	4.7K ±10%	10 W
R102	100K ±10%	½ W
R103		
R104	100K. ±10%	¼ W
R105	330Ω ±10%	¼ W
R106	100K ±10%	¼ W
R107	220Ω ±10%	¼ W
R108	15K ±10%	¼ W
R109	33Ω ±10%	¼ W
R110	3.3K ±10%	½ W
R111	3.3K ±10%	½ W
R112	3.3K ±10%	½ W
R113	3.3K ±10%	½ W
RV101	50,000Ω ±10%	1 W

TOCK LIST	REF	MISCELLANEOUS	STOCK LIST
M 5633	L109	COIL	1/TM 5633/7
TM 5632	L110	COIL	1/TM 5633/8
TM 5633			
TM 5632	V101	VALVE 5763	39/TF 1246
M 5633			
TM 5632	SK101	CO-AX. SOCKET	29/TM 5630
TM 5632	PL101	PLUG MAINS	36/TF 1246
	PLP101	LAMP	17/TF 1246
TM 5632	SW101	SWITCH	19/TF 1246
K LIST.			
5273E			
5273E			
5633/1			
5633/2			
5633/3			
5633/4			
5633/5			
5633/6			

TITLE CIRCUIT DIAGRAM FOR 40Kc/s. TO 50Mc/s. OSCILLATOR

DRN K.H.W.	ASSY. TE 27390
DATE 4-12-57	WIRING
CHKD JT	S LIST VARIOUS
APP D.W.	DRAWING No. TC.27396
TRCD. T.D.S.	

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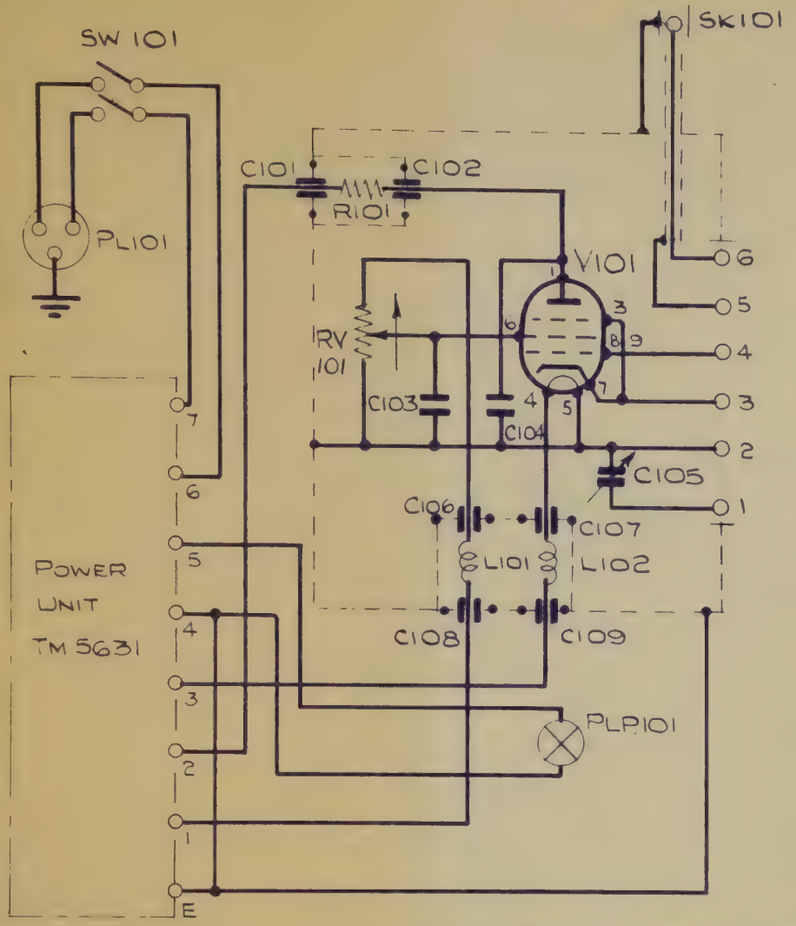

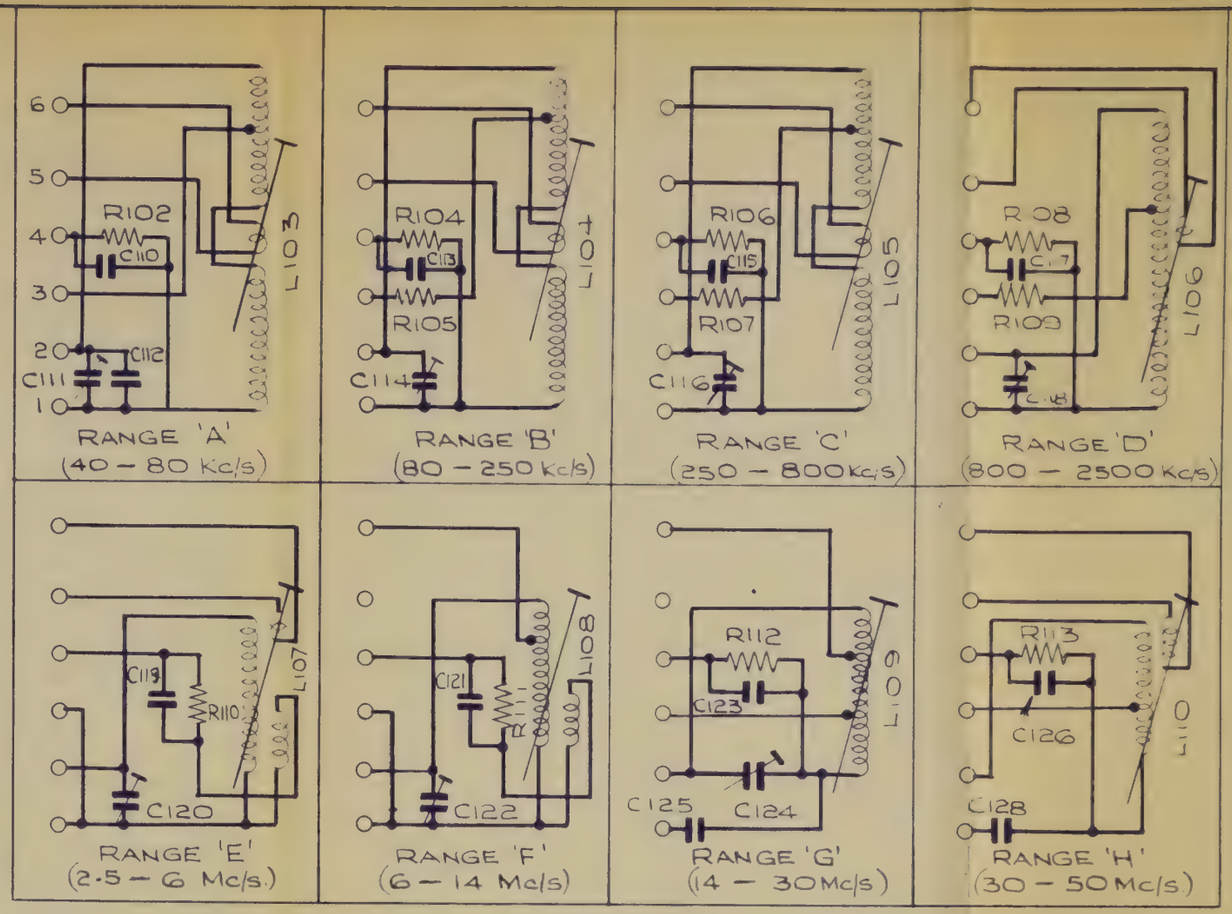

REF.	RESISTORS		STOCK LIST
R101	4·7K ±10%	10 W	2/TM 5273D
R102	100K ±10%	½ W	18/TM 5632
R103			
R104	100K. ±10%	¼ W	12/TM 5632
R105	330Ω ±10%	¼ W	13/TM 5632
R106	100K ±10%	¼ W	12/TM 5632
R107	220Ω ±10%	¼ W	14/TM 5632
R108	15K ±10%	¼ W	17/TM 5632
R109	33Ω ±10%	¼ W	15/TM 5632
R110	3·3K ±10%	½ W	16/TM 5632
R111	3·3K ±10%	½ W	16/TM 5632
R112	3·3K ±10%	½ W	16/TM 5632
R113	3·3K ±10%	½ W	16/TM 5632
RV101	50,000Ω ±10%	1 W	37/TM 5630

REF	CAPACITORS	STOCK LIST
C101	4700pF	5/TM 5273D
C102	4700pF	5/TM 5273D
C103	·01μF ±20% 400V	40/TM 5630
C104	·01μF ±20% 400V	40/TM 5630
C105	532 pF. SWING	27/TM 5630
C106	4700pF	5/TM 5273E
C107	4700pF	5/TM 5273E
C108	4700pF	5/TM 5273E
C109	4700pF	5/TM 5273E
C110	22pF ±10% 500V	21/TM 5632
C111	3–19.5 pF. AIR TRIMMER	4/TM 5633
C112	47pF ±10% 500V	20/TM 5632
C113	22pF ±10% 500V	21/TM 5632
C114	3–19.5 pF AIR TRIMMER	4/TM 5633
C115	22pF ±10% 500V	21/TM 5632
C116	3–19.5 pF. AIR TRIMMER	4/TM 5633
C117	100pF ±2% 750V	19/TM 5632
C118	3–19.5pF AIR TRIMMER	4/TM 5633
C119	300pF ±20% 600V	22/TM 5632

REF	CAPACITORS	STOCK LIST
C120	3–19.5pF AIR TRIMMER	4/TM 5633
C121	300pF ±20% 600V	22/TM 5632
C122	3–19.5pF AIR TRIMMER	4/TM 5633
C123	300pF ±20% 600V	22/TM 5632
C124	3–19.5pF AIR TRIMMER	4/TM 5633
C125	390pF ±5% 750V	23/TM 5632
C126	300pF ±20% 600V	22/TM 5632
C127		
C128	150pF ±5% 750V	24/TM 5632

REF	MISCELLANEOUS	STOCK LIST
L101	COIL	1/TM 5273E
L102	COIL	2/TM 5273E
L103	COIL	1/TM 5633/1
L104	COIL	1/TM 5633/2
L105	COIL	1/TM 5633/3
L106	COIL	1/TM 5633/4
L107	COIL	1/TM 5633/5
L108	COIL	1/TM 5633/6

REF	MISCELLANEOUS	STOCK LIST
L109	COIL	1/TM 5633/7
L110	COIL	1/TM 5633/8
V101	VALVE 5763	39/TF 1246
SK101	CO-AX. SOCKET	29/TM 5630
PL101	PLUG MAINS	36/TF 1246
PLP101	LAMP	17/TF 1246
SW101	SWITCH	19/TF 1246

TITLE CIRCUIT DIAGRAM FOR 40Kc/s. TO 50Mc/s. OSCILLATOR

DRN K.H.W.	ASSY. TE 27390
DATE 4-12-57	WIRING
CHKD J.T	S LIST VARIOUS
APP J.H	DRAWING No. TC.27396
TRCD. T.D.S.	

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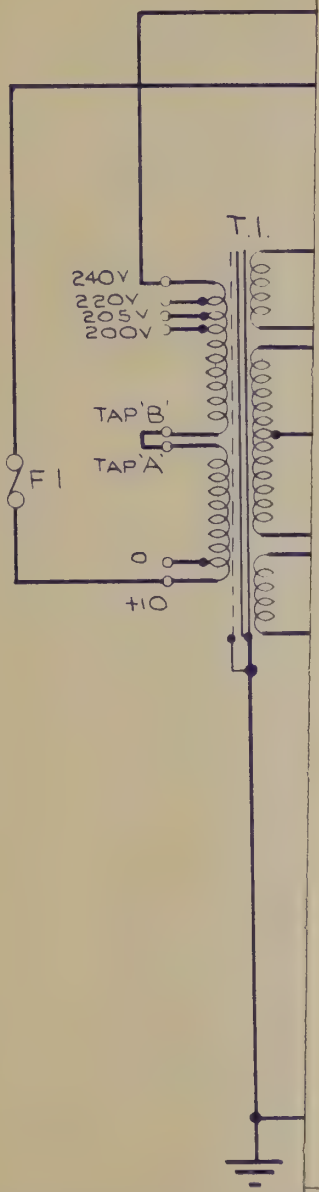
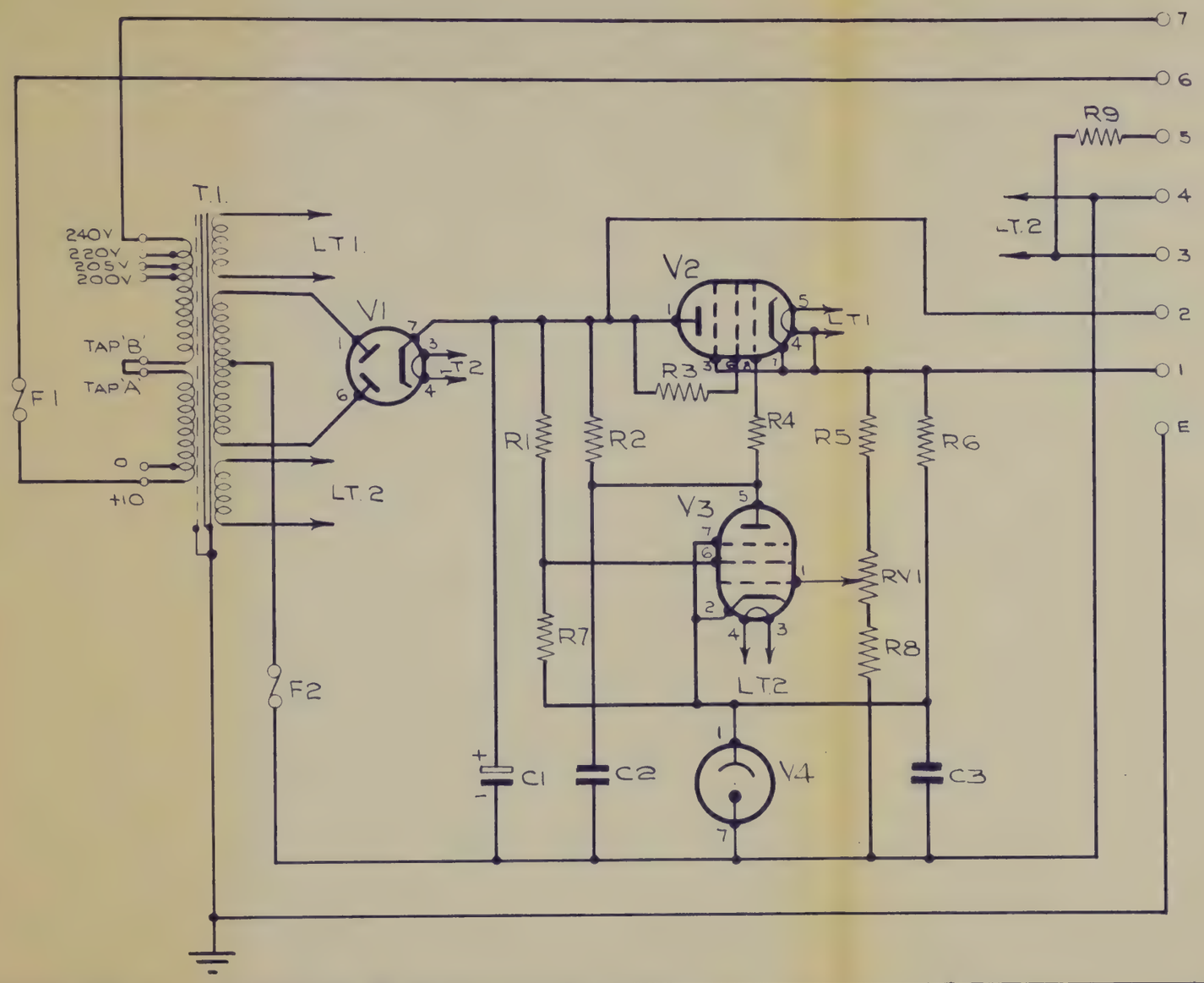


REF	RESISTORS		ST
R1	330KΩ ±10%	¼ W	32
R2	1MΩ ±10%	¼ W	31
R3	100Ω ±10%	¼ W	30
R4	4.7KΩ ±10%	¼ W	33
R5	150KΩ ±10%	¼W	36
R6	47KΩ ±10%	½ W	39
R7	47KΩ ±10%	¼ W	34
R8	82KΩ NOM. A.I.C.	½ W	37
R9	10Ω ±10%	½ W	38
RV1	30K VAR		35

CK LIST
F1246
5631
M 5631
M 5631
M 5631

TITLE. POWER UNIT	
DRN. K.H.W	ASSY TD 27435
DATE 5-12-57	WIRING
CHKD	S. LIST. TM 5631
APP D W	DRAWING No. TC.27437.
TRCD. T.D.S.	
MARCONI INSTRUMENTS LTD	



REF	RESISTORS		STOCK LIST
R1	330KΩ ±10%	¼ W	32/ TM 5631
R2	1MΩ ±10%	¼ W	31/ TM 5631
R3	100Ω ±10%	¼ W	30/ TM 5631
R4	4.7KΩ ±10%	¼ W	33/ TM 5631
R5	150KΩ ±10%	¼ W	36/ TM 5631
R6	47KΩ ±10%	½ W	35 TM 5631
R7	47KΩ ±10%	¼ W	34 TM 5631
R8	82KΩ NOM. A.I.C.	½ W	37 TM 5631
R9	10Ω ±10%	½ W	38 TM 5631
RV1	30K VAR		39 TM 5631

REF	CAPACITORS	STOCK LIST
C1	8μF $^{-20\%}_{+50\%}$ 500V. D.C.	42/ TM 5631
C2	300pF ±20% 600V. HUNTS W99	43/ TM 5631
C3	·01μF ±20% 400V. HUNTS W99	44/ TM 5631

REF	VALVES	STOCK LIST
V1	6X4	38 TF 1246
V2	5763	39/ TF 1246
V3	6AK5	40/ TF 1246
V4	85A2	41/ TF 1246

REF	MISCELLANEOUS	STOCK LIST
T1	TRANSFORMER	1/ TM 5631
TS1	TAG STRIP	18 TM 5631
F1	FUSE LINK 2A	60/ TM 5631
F2	FUSE LINK 150mA	61/ TM 5631

TITLE. POWER UNIT	
DRN. K.H.W.	ASSY TD 27435
DATE 5-12-57	WIRING
CHKD [illegible]	S. LIST. TM 5631
APP D.W.	DRAWING No. TC.27437.
TRCD. T D S	

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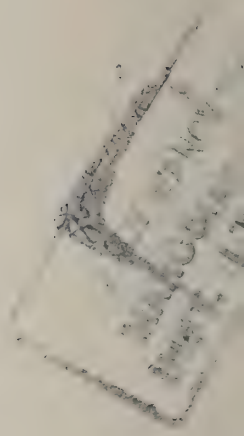


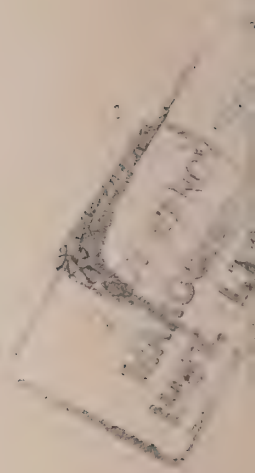
FUNCTIONAL DIAGRAM

OF

40 kc/s TO 50 Mc/s OSCILLATOR

TYPE TF1246

MARCONI INSTRUMENTS LIMITED							
DRN	A. B. R.	DATE	8/58	CHKD		ISSUE	1
STOCK LIST	TF 1246			DRG NO	TLB 28414		



FUNCTIONAL DIAGRAM

OF

40 kc/s TO 50 Mc/s OSCILLATOR

TYPE TF1246

MARCONI INSTRUMENTS LIMITED							
DRN	A. B. R.	DATE	8/58	CHKD		ISSUE	1
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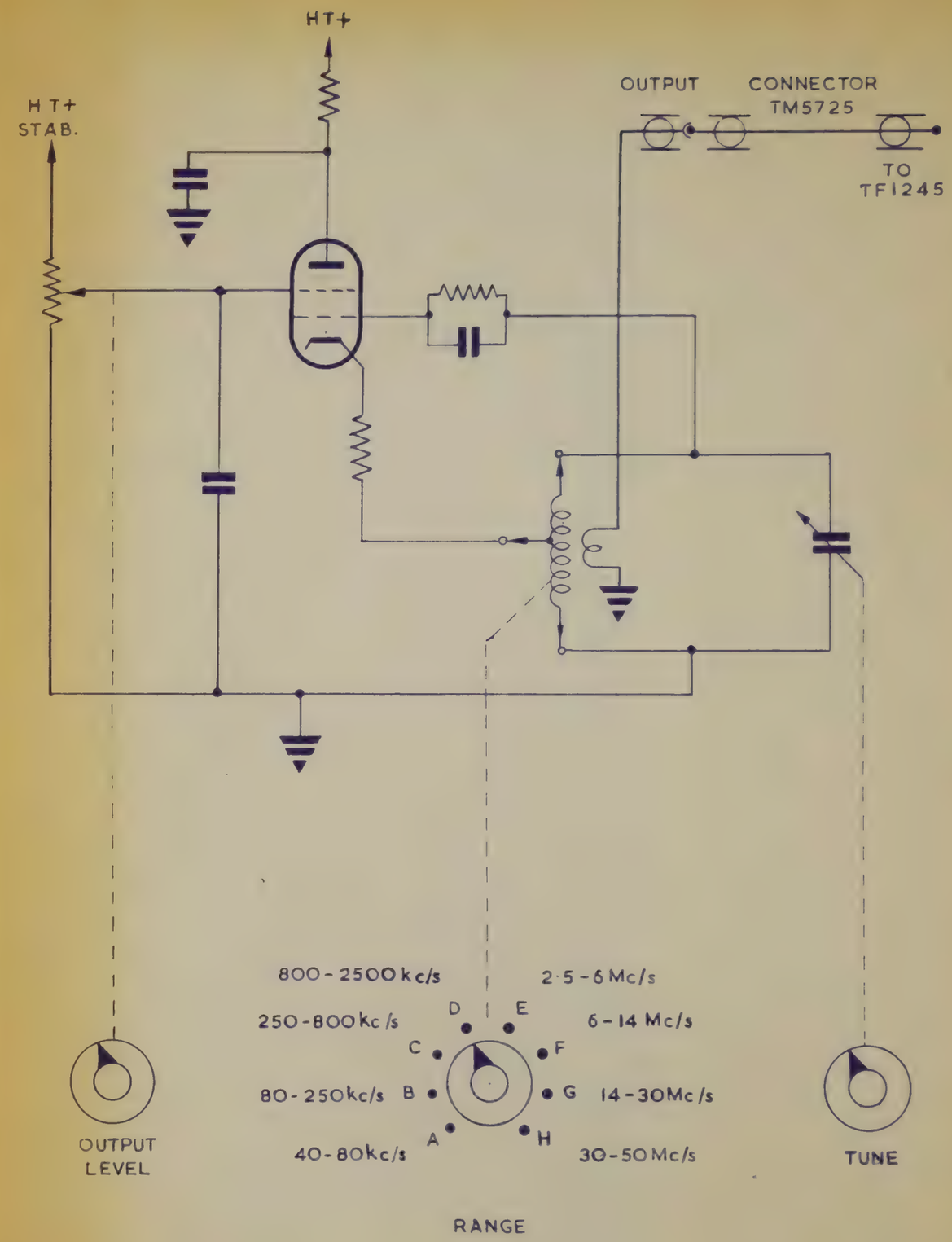
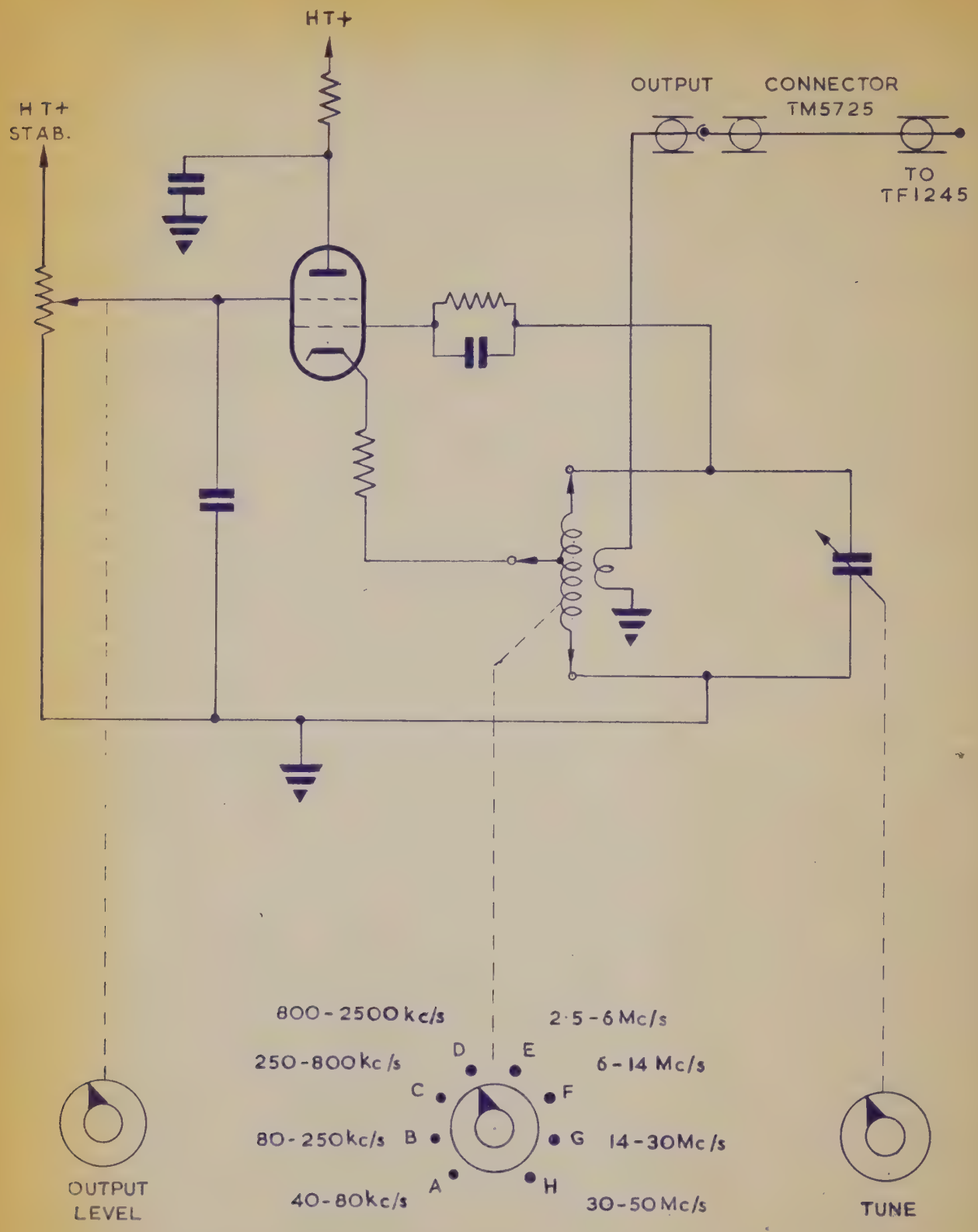


FUNCTIONAL DIAGRAM OF
40kc/s TO 50Mc/s OSCILLATOR TYPE TF 1246

TLB 28414



FUNCTIONAL DIAGRAM OF
40kc/s TO 50Mc/s OSCILLATOR TYPE TF 1246

TLB 28414

MAINS INPUT CONNECTIONS

100-150/200-250 VOLT PRI.

TRANSFORMERS.

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MAINS INPUT CONNECTIONS

100-150/200-250 VOLT PRI.

TRANSFORMERS.

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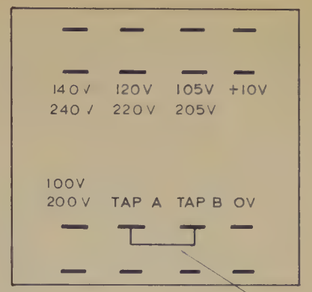
STOCK LIST				DRG. No.	TLC 27612/1		

MAINS INPUT CONNECTIONS

100-150/200-250 VOLT PRI.

TRANSFORMERS.



FOR

200-250 VOLTS MAINS SUPPLIES

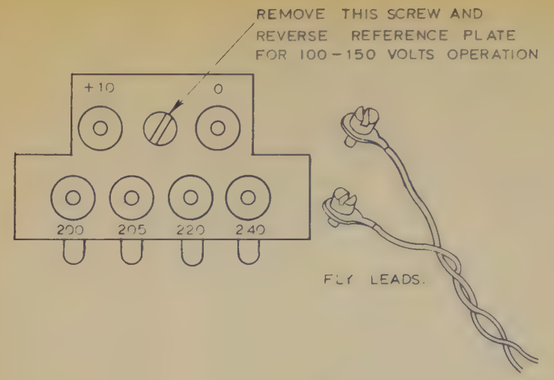
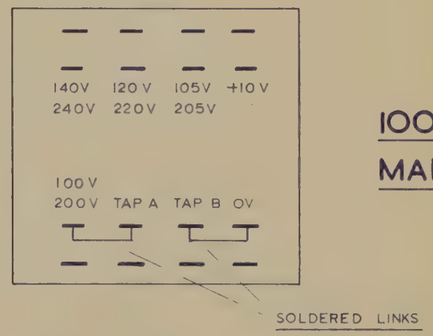
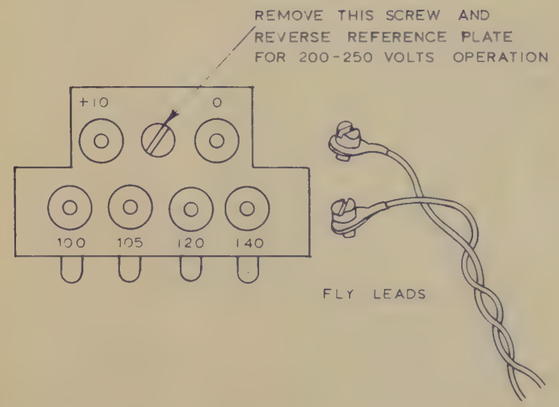


FIGURE 1.



FOR

100-150 VOLTS MAINS SUPPLIES



A ARRANGEMENT OF PRIMARY SOLDER TAG CONNECTIONS ON MAINS TRANSFORMER.

B MAINS TAPPING PANEL

CONNECT THE FLY-LEADS TO GIVE A COMBINATION TO SUIT MAINS VOLTAGE ONE FLY-LEAD MUST GO TO EITHER '+10' OR '0' TAP

FIGURE 2.

MAINS INPUT CONNECTIONS.

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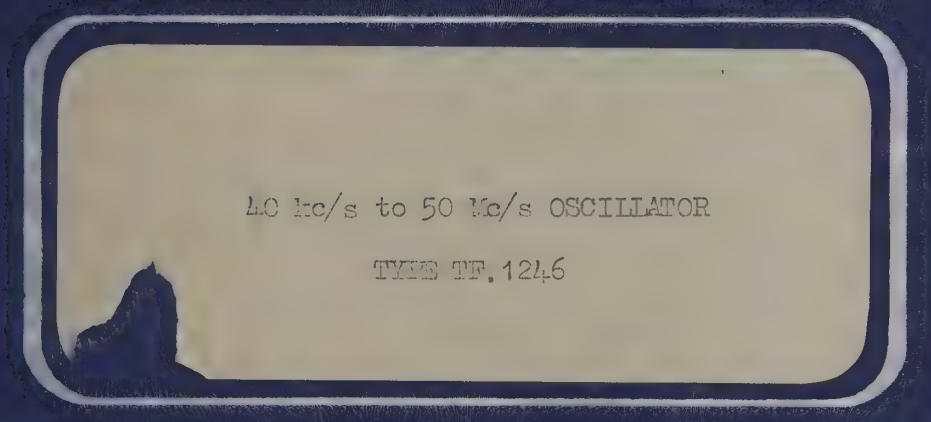
Operating Instructions



MARCONI INSTRUMENTS LIMITED, ENGLAND

OPERATING INSTRUCTIONS No. EB 1246

for

40 kc/s to 50 Mc/s OSCILLATOR

TYPE TF 1246

M.I. Ltd.

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DRAWINGS	Ref. No.
COMPLETE CIRCUIT DIAGRAM OF OSCILLATOR SECTION	TC 27396
COMPLETE CIRCUIT DIAGRAM OF POWER UNIT SECTION	TC 27437
FUNCTIONAL DIAGRAM	TLB 28414
MAINS INPUT ARRANGEMENTS	TLC 27612/1

SCHEDULE OF PARTS SUPPLIED

1. One Oscillator Type TF 1246 complete with attached mains lead and valves, etc. as under:-

Valves:	Two:	Type 5763, Beam Tetrodes.
	One:	Type 6X4, Full-Wave Rectifier.
	One:	Type 6AK5, Pentode.
	One:	Type 5651, Voltage Stabilizer.
Fuses:	One:	2-amp, Cartridge.
	One:	150-mA, Cartridge.
Lamp:	One:	6.3-volt, 0.15-amp, M.B.C., Pilot Lamp.

2. One Instruction Book No. EB 1246.

The following item is an optional accessory for use with the oscillator and is supplied only if specially ordered.

50-ohm Matching Unit Type TM 5726; enables oscillator to be used as a 50-ohm general-purpose test source.

1 DESCRIPTION

1.1 GENERAL

The 40 kc/s to 50 Mc/s Oscillator Type TF 1246 is primarily intended as a test-circuit energizing source for the Marconi Circuit Magnification Meter Type TF 1245; after the addition of an optional matching unit, it can also be used as a general-purpose wide-band oscillator for such applications as energizing an r.f. bridge.

To suit the Circuit Magnification Meter, the output circuit of the Oscillator is designed to operate into a resistive load of 0.5 ohm, across which it will develop an output variable up to about 600 mV. However, so that the use of the Oscillator is not limited to this specialized application, an optional Matching Unit, Type TM 5726, is available to convert its low output impedance to a nominal 50 ohms; with the matching unit connected, the maximum output across a 50-ohm load is variable up to approximately 4 volts.

In its normal application the output of the Oscillator is monitored by the Q-Multiplier meter of the Circuit Magnification Meter; for this reason, no monitoring arrangements are included in the Oscillator itself.

1.2 DESIGN DETAILS

The general arrangement of the electrical circuit is shown on the Functional Diagram No. TLB 28414; the complete Circuit Diagram of the oscillator section is given on Drawing No. TC 27396 and of the power unit section on Drawing No. TC 27437.

Reference to these diagrams should assist the reader in fully understanding the circuit description in this section.

1.2.1 Oscillator Circuit

The output frequency is generated by a single-valve oscillator circuit incorporating a beam tetrode valve, V101. The frequency coverage, 40 kc/s to 50 Mc/s, is divided into eight ranges; the appropriate range is selected by means of a front-panel control coupled to a turret on which are mounted the tuning inductors, L103 to L110, and their associated components. Tuning over each range is accomplished by means of capacitor C105.

The screen and anode of V101 are both bypassed to chassis, and the valve functions as a grounded-anode triode oscillator. On the four lowest ranges (up to 2.5 Mc/s), the circuit is of an inverted-Hartley type. Over the fifth and sixth ranges (2.5 to 14 Mc/s) a tuned-cathode

1.2.1 (continued)

circuit is used, with inductive feedback to the valve grid, so that the impedance presented in the cathode circuit is sufficient to maintain maximum efficiency. Above 14 Mc/s, the maximum efficiency is maintained again by the use of a Modified-Hartley circuit, but with the effective value of tuning capacitance reduced by the connection of a fixed capacitor in series with C105.

1.2.2 Output Arrangements

Although, with respect to r.f. voltages, the anode and screen of V101 are coupled together, a stabilized d.c. voltage is applied separately to the screen via a variable potentiometer, RV1. By adjustment of the screen d.c. potential, the current through the valve, and therefore the level of oscillation, can be determined. The screen voltage control - designated OUTPUT LEVEL - is uncalibrated. Output level is monitored by a voltmeter on the TF 1245 Circuit Magnification Meter.

The load which terminates the Oscillator output, i.e., the input resistance of the TF 1245, is 0.5 ohm. The impedance coupled into the oscillator tuned circuit is, however, largely reactive. This is due to (i) the secondary self-inductance and (ii) the fact that, for convenience, an unmatched 50-ohm connecting cable is used. If the effect of coupled impedance is allowed to vary, then the frequency of oscillation will also vary. Therefore it will be seen that the frequency calibration will only be accurate if the correct load is connected to the Oscillator. To ensure that this is always the case, the Circuit Magnification Meter is provided with a special 50-ohm coaxial lead, Type TM 5725, which should always be used for coupling to the Oscillator.

To enable the Oscillator to be used as a 50-ohm source, an optional Matching Unit, Type TM 5726, is available. This accessory takes the form of a 100:1 impedance step-up transformer the primary of which is a single straight conductor; the secondary is wound on a mu-metal former toroidally around the primary. The Matching Unit output socket is a 50-ohm type BNC. The load presented by the Matching Unit and its cable to the oscillator is such that the frequency calibration of the latter is still correct.

1.2.3 Power Supply Circuit

The mains transformer has a double-wound primary which is tapped to allow operation from mains supplies within the ranges 100 to 150 volts and 200 to 250 volts.

The oscillator h.t. and l.t. are derived from a built-in power unit. The anode voltage for the oscillator valve is taken from the cathode of the full-wave rectifier, capacitance smoothed, and applied direct to the anode of the valve. The screen supply is stabilized by a series-regulator circuit before application to the screen voltage - OUTPUT LEVEL - potentiometer, which controls the oscillator output.

The heater voltages for all valves are taken from two 6.3-volt windings on the mains transformer.

2 INSTALLATION

The Oscillator Type TF 1246 is dispatched with all valves in their holders and with its mains-input circuit adjusted for immediate operation from 240-volt, 40- to 100-c/s supplies, unless otherwise specified at the time of ordering.

The instrument can be adjusted for operation from any supply voltage within the ranges 100 to 150 volts and 200 to 250 volts. To check or alter the settings of the mains transformer tappings, refer to Section 2.1 which follows.

2.1 MAINS INPUT ARRANGEMENTS

2.1.1 General

The mains transformer has a double-wound primary, and its two tapped sections are connected in series-parallel for 100- to 150-volt operation, or in series for 200- to 250-volt operation.

The mains input to the transformer is carried on two fly-leads connected by screws to a mains tapping panel. Attached to the tapping panel is a pierced reference plate which is reversible and marked with a selection of voltages. One one side of the plate, the voltages are applicable to the 100- to 150-volt range; on the other side to the 200- to 250-volt range.

The two main sections of the primary are connected together by a link or links; these links are used to join the appropriate solder-tag terminals which are mounted directly on the transformer coil. To change from one major voltage range to the other, the linking between the transformer tags is altered; to change by an increment within one of the major voltage ranges, the position of the screw-secured fly-leads on the tapping panel is altered. Diagram TLC 27612/1, included after page 8, shows, in schematic form, the method of adjusting the mains transformer.

The fly-lead connections to the mains tapping panel can be viewed through a transparent plastic cover on the rear case panel. To gain access to the tapping panel, release the single captive screw which secures the cover to the case panel.

To examine the link connections on the transformer coil, remove the rear case panel as follows: detach the two screws holding the panel to the back of the instrument; detach the two screws on the underside at the rear of the instrument. The panel can then be removed and the transformer will be seen mounted adjacent to the mains tapping panel.

2.1.2 Operation From 200- to 250-volt, 40- to 100-c/s Supplies

To adjust the instrument to operate from 200- to 250-volt supplies, connect the link of the transformer coil as shown in Fig. 1 of TLC 27612/1. Then adjust the fly-lead connections, as necessary, to suit the local Supply voltage.

2.1.3 Operation From 100- to 150-volt, 40- to 100-c/s Supplies

To adjust the instrument to operate from 100- to 150-volt supplies, connect the links on the transformer coil as shown in Fig. 2 of TLC 27612/1. Then adjust the fly-lead connections, as necessary, to suit the local Supply voltage.

3 OPERATION

3.1 SWITCHING ON AND WARMING UP

Be sure that the instrument is correctly adjusted to suit the particular supply to which it is to be connected. Then proceed as follows:-

(1) Connect the mains lead to a supply socket. The lead is permanently attached to the instrument and is cleated, when not in use, by two spring clips on the rear case-panel.

(2) Switch ON by means of the SUPPLY switch. The pilot lamp should now glow.

Before proceeding further, wait two or three minutes for the valves and internal circuits to warm up. If a very high order of stability is required, extend this period to approximately half an hour.

3.2 SETTING OUTPUT FREQUENCY AND LEVEL

3.2.1 Tuning

The Oscillator covers frequencies from 40 kc/s to 50 Mc/s in eight ranges as follows:

RANGE	FREQUENCY COVERAGE
A	40 to 80 kc/s
B	80 to 250 kc/s
C	250 to 800 kc/s
D	800 to 2,500 kc/s
E	2.5 to 6.0 Mc/s
F	6 to 14 Mc/s
G	14 to 30 Mc/s
H	30 to 50 Mc/s

To set the Oscillator to a particular frequency: switch the RANGE control to the required range; tune to the desired frequency; and read the frequency on the tuning-dial calibration-arc appropriate to the RANGE setting selected.

It should be remembered that the frequency calibration is only accurate, for reasons explained in Section 1.2.2, when the output is correctly terminated. For details of output termination, refer to Sections 3.3 and 3.4.

3.2.2 Adjusting Output Level

Adjust the uncalibrated OUTPUT LEVEL control to give an output level suitable for application to associated equipment. The output can be applied to (i) the Marconi Circuit Magnification Meter TF 1245, or (ii) a 50-ohm load. These applications and the output levels available are discussed in Sections 3.3 and 3.4 respectively.

3.3 USE WITH CIRCUIT MAGNIFICATION METER TF 1245

The main function of this Oscillator is to provide a test-circuit energizing voltage for the Circuit Magnification Meter TF 1245, and, in this role, may be considered as an integral part of that instrument. Therefore, it has been found expedient to include the relevant operational procedure for the Oscillator in the handbook for the Circuit Magnification Meter.

When used with the TF 1245, the Oscillator output level is continuously variable up to a maximum of about 600 mV. This full-output level enables the maximum Q-reading multiplication factor of x0.9 to be attained adequately.

3.4 USE AS A 50-OHM SOURCE

In addition to its use with the TF 1245, the Oscillator can be employed as a general-purpose test source having a nominal output impedance of 50 ohms. To obtain this condition, it is necessary to couple the optional Matching Unit Type TM 5726 to the R.F. OUTPUT socket of the Oscillator.

It should be noted that, with the Matching Unit connected, the Oscillator is arranged to work into a 50-ohm load. If it is required to feed the Oscillator into any other value of load resistance, first match the load to within at least ±10 ohms of 50 ohms by the addition of a series or parallel resistance.

With a 50-ohm load connected to the Matching Unit output socket, the voltage developed across the load is continuously variable from zero to a maximum of approximately 4 volts.

The Matching Unit has a 50-ohm BNC socket. Listed below are reference numbers given by several authorities and manufacturers to some of the BNC plugs which will fit the outlet.

Great Britain,	Air Ministry:	10H/20935
	Films and Equipments Ltd.:	UG-88/U
		UG-913/U
	Belling and Lee Ltd.:	L.1331/FP
		L.1331/RFP
	Transradio Ltd.:	BN.1/5
		BN.7/5
United States,	Military No.:	UG-88/U
		UG-913/U

4 MAINTENANCE

4.1 FUSES

The Oscillator is protected by two fuses. One is in series with the mains transformer primary and the other is in the h.t. secondary centre-tap line. Both are standard 1-inch long, 1/4 inch diameter cartridge fuses. The fuse in the primary is rated at 2 amps, and the fuse in the h.t. secondary at 150 mA. Both fuses are accessible at the rear of the instrument and can be replaced without removing the rear case-panel.

4.2 ACCESS TO COMPONENTS

4.2.1 General

The valves may normally be replaced without special selection. The power-supply valves, V1 to V4, are immediately accessible on removing the rear case-panel as described in Section 4.2.2, paragraph (1). The oscillator valve is accessible after removing the oscillator unit cover as described in Section 4.2.3.

4.2.2 Removal of Power Unit

(1) Remove the rear case-panel after detaching four screws; two of the screws hold the panel to the back of the instrument and the remaining two are on the underside at the rear.

(2) Detach the two screws, one on either side of the power unit, which hold the chassis to the main framework of the instrument. The chassis can then be withdrawn.

The unit remains attached to the instrument, however, by the leads soldered to the power-unit connection panel. The length of the leads is sufficient to permit all normal maintenance operations to be carried out. Should it be necessary to remove the unit completely, unsolder the eight leads from the panel; note the cable-form colour sequence for subsequent replacement.

4.2.3 Removal of Oscillator Unit Cover

(1) Remove the power unit as described in Section 4.2.2 but do not unsolder the leads from the power-unit connection panel.

(2) Detach the case top-panel by undoing the four screws holding it to the top of the instrument.

(3) Remove the eight screws, four at the top and four at the bottom, which secure the oscillator-unit cover in position. The cover can then be withdrawn.

4.3 WORKING VOLTAGES

The voltages given in this section, for guidance when servicing the instrument, were obtained from a representative TF 1246; the voltmeter used was an Avometer Model 8, which has a resistance of 20,000 ohms/volt.

All voltages should be measured with the correct supply voltage applied to the appropriate transformer-primary tapping (e.g., 240 volts applied to the 240-volt tap).

All measurements are made with respect to chassis unless otherwise stated.

Mains transformer, h.t. secondary:	350-0-350 V a.c.
" " LT 1 (between pins 4 and 5 of V2):	6.3 V a.c.
" " LT 2 (connector panel tag 3)	6.3 V a.c.
H.T. unstabilized (connector panel tag 2):	350 to 440 V d.c. *
H.T. stabilized (connector panel tag 1):	245 V d.c.
V101 anode voltage (pin 1):	110 to 370 V d.c. *

* The level of this voltage will depend on the anode current drawn by the oscillator valve at any particular frequency and r.f. output level. These figures are only included to give guidance as to the expected range.

4.4 ADJUSTMENT OF PRESET CONTROLS

The only preset controls are the inductors and trimmer capacitors associated with each frequency range. Adjustment of these presets follows normal practice, namely, setting inductance at the low-frequency end of a range and capacitance at the high-frequency end, and is quite straightforward. However, it is important that, for reasons explained in Section 1.2.2, the r.f. output is always correctly terminated. This termination must be either the Circuit Magnification Meter TF 1245 or the optional Matching Unit TM 5726, itself loaded with 50 ohms resistance.

To adjust the inductors and capacitors, first remove the oscillator unit cover as described in Section 4.2.3. To simplify access to the trimmer capacitors, it is advisable to remove the bottom case-panel by undoing the two remaining screws on the underside of the instrument. The tuning assembly 'in circuit' at any particular setting of the RANGE switch is at the bottom of the turret disk.

MAINS INPUT CONNECTIONS
100-150/200-250 VOLT PRI.
TRANSFORMERS

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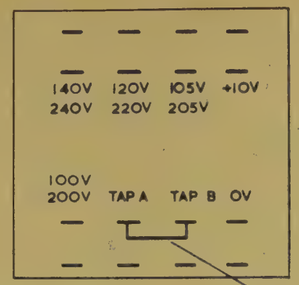


200-250 VOLTS MAINS SUPPLIES

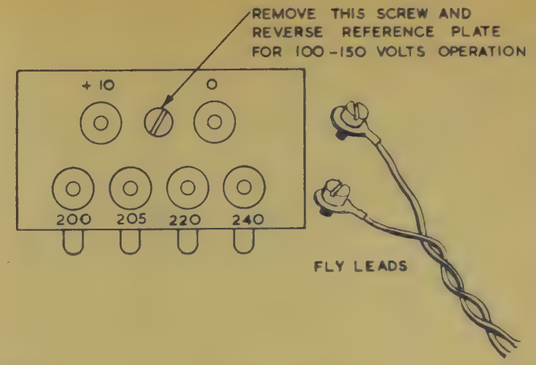
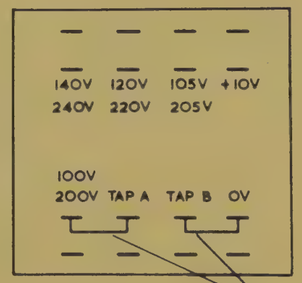
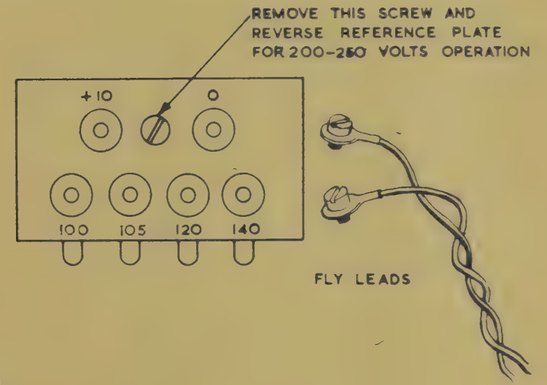


FIGURE 1.

SOLDERED LINK. FOR 100-150 VOLTS OPERATION RECONNECT AS IN FIGURE 2



100-150 VOLTS MAINS SUPPLIES



SOLDERED LINKS. FOR 200-250 VOLTS OPERATION RECONNECT AS IN FIGURE 1

A ARRANGEMENT OF PRIMARY SOLDER TAG CONNECTIONS ON MAINS TRANSFORMER

B MAINS TAPPING PANEL
CONNECT THE FLY-LEADS TO GIVE A COMBINATION TO SUIT MAINS VOLTAGE.
ONE FLY-LEAD MUST GO TO EITHER '+10' OR '0' TAP

FIGURE 2.

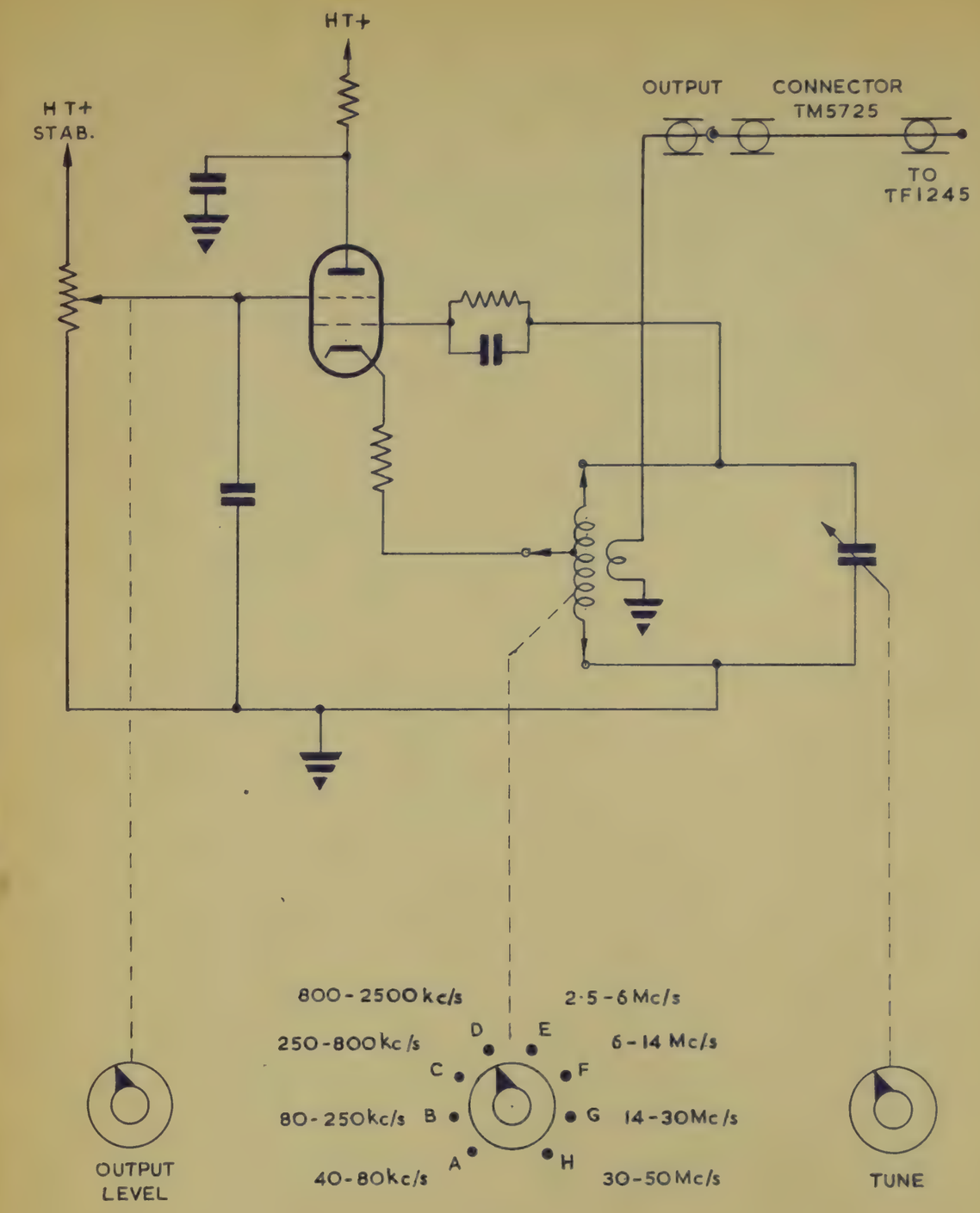
MAINS INPUT CONNECTIONS

FUNCTIONAL DIAGRAM

OF

40 kc/s TO 50 Mc/s OSCILLATOR

TYPE TF1246



FUNCTIONAL DIAGRAM OF
40 kc/s TO 50 Mc/s OSCILLATOR TYPE TF 1246

TLB 28414

MARCONI INSTRUMENTS LIMITED

DRN	A. B. R.	DATE	8/58	CHKD		ISSUE	1
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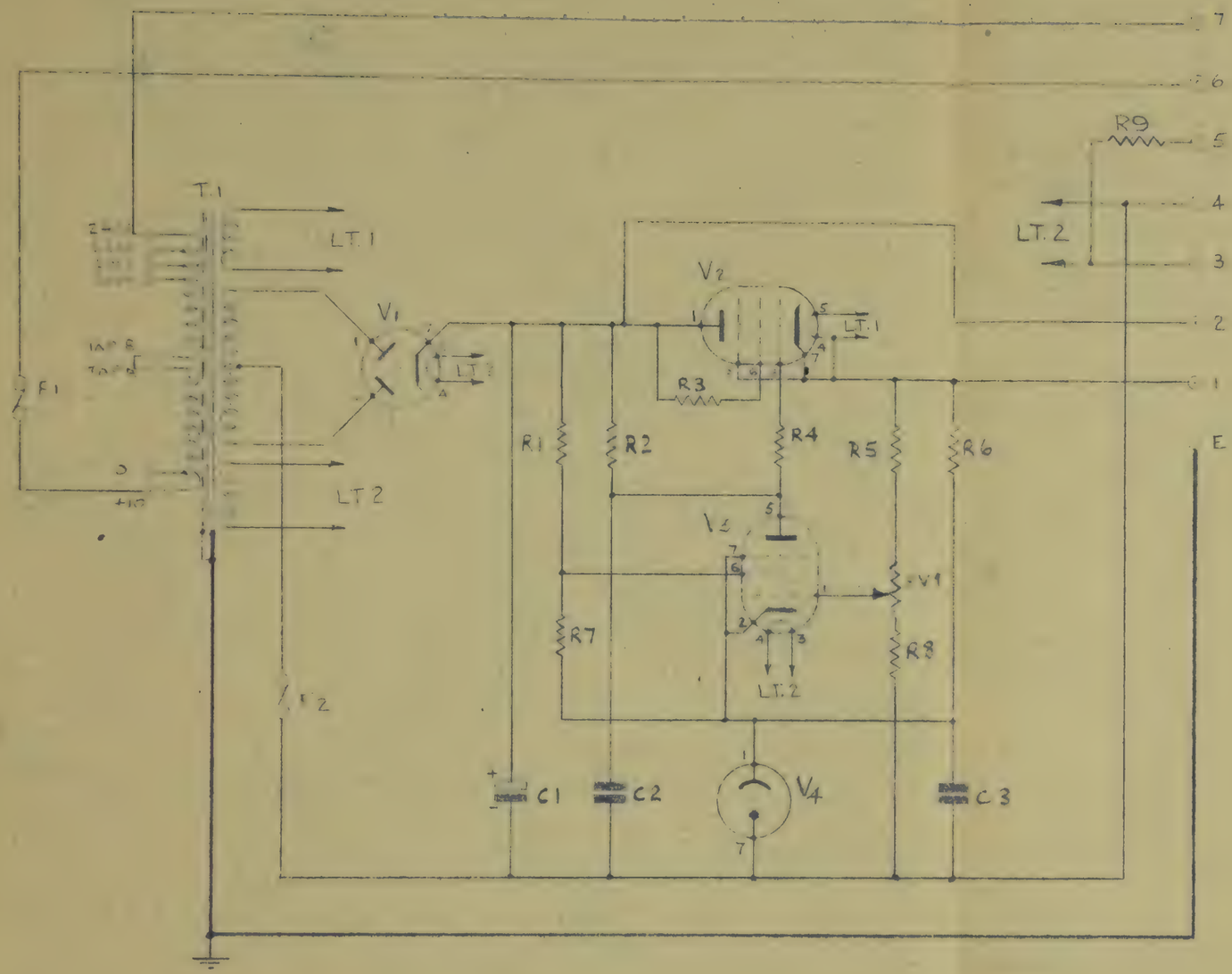

REF		STOCK LIST
R 1		32/TM 5631
R 2		31/TM 5631
R 3		37/TM 5631
R 4		33/TM 5631
R 5		36/TM 5631
R 6		35/TM 5631
R 7		34/TM 5631
R 8		38/TM 5631
R 9		38/TM 5631
V R 1	30K VAR	

REF		STOCK LIST
C 1	8 µF ±20% 450 V ELECT.	42/TM 5631
C 2	300 PF. ±20% 600 V HUNTS W99	43/TM 5631
C 3	.6 µF ±2% 400 V HUNTS W99	44/TM 5631
V 1	6 Y 4	39/TF 1246
V 2	5 Y 3	39/TF 1246
V 3	6 P H 5	40/TF 1246

REF		STOCK LIST
V 4	85 A 2	41/TF 1246
T 1		
F 1		
F 2		

2

TITLE POWER UNIT	
DRAWN K.H.V.	ASSY. TD 27435
DATE 5-12-57	WIRING —
CHKD.	S. LIST TM 5631
APP.	DRG. No TE 21437
TRACED	

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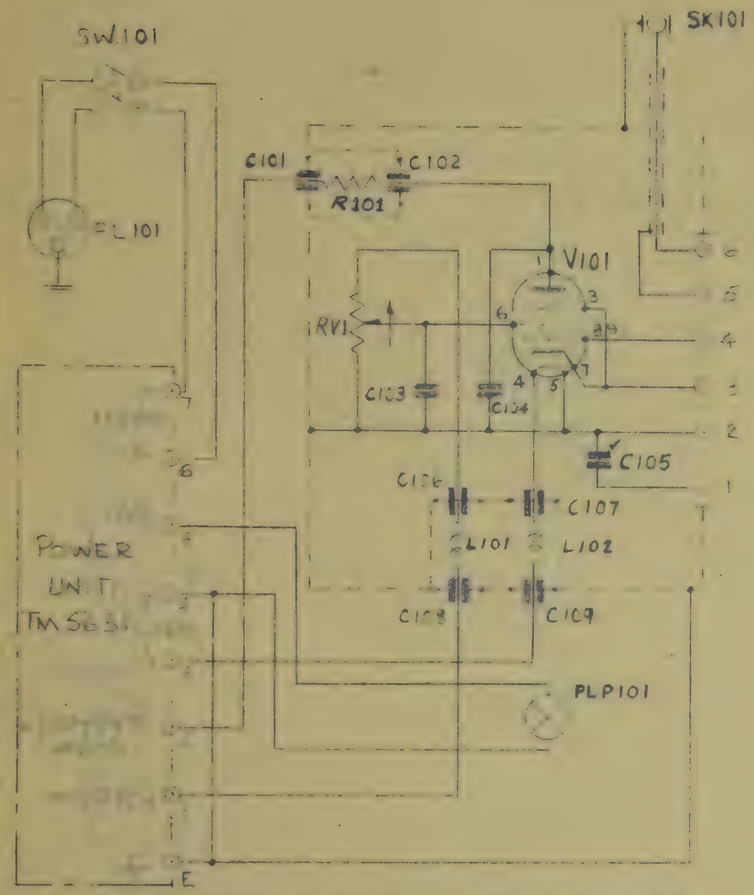

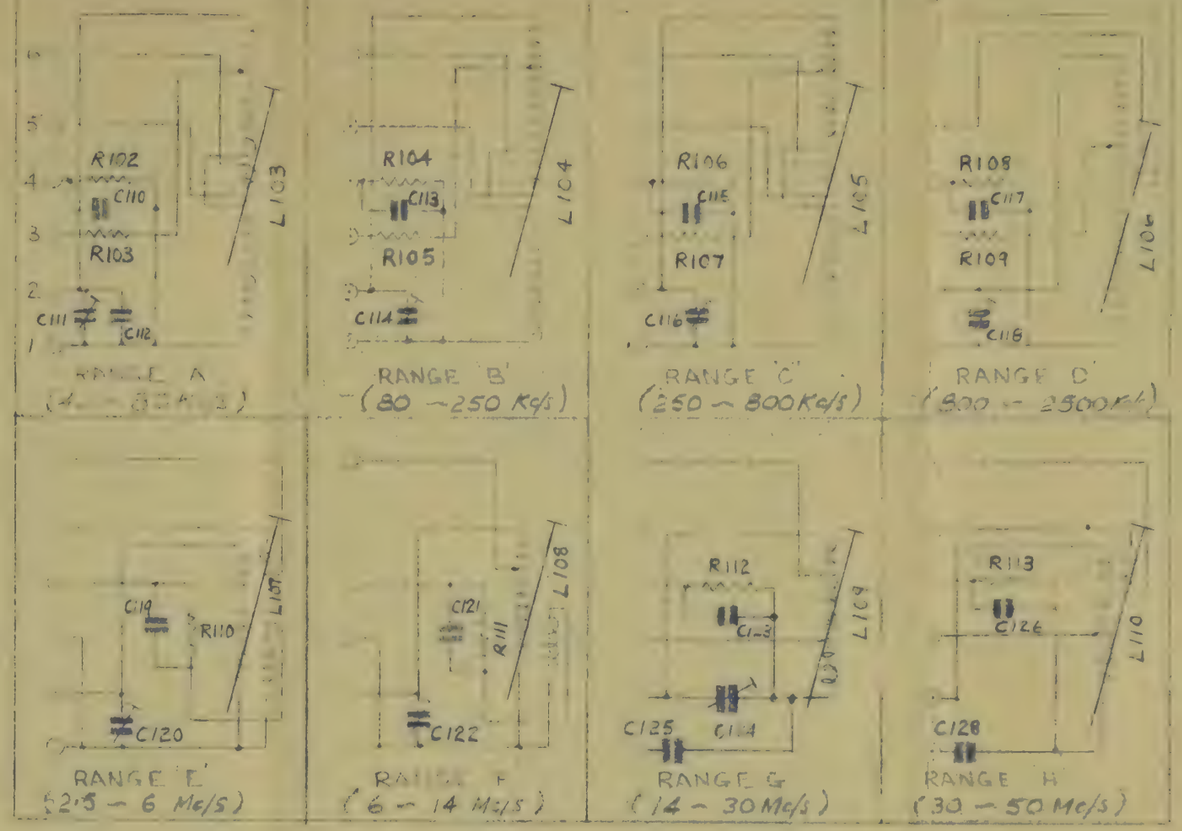

REF				STOCK LIST
R101	4·7K	± 10%	10 W	2/TM5273/D
R102	100K	± 10%	¼ W	12/TM5632
R103	330Ω	± 10%	¼ W	13/TM5632
R104	100K	± 10%	¼ W	12/TM5632
R105	330Ω	± 10%	¼ W	13/TM5632
R106	100K	± 10%	¼ W	12/TM5632
R107	220Ω	± 10%	¼ W	14/TM5632
R108	100K	± 10%	¼ W	12/TM5632
R109	33Ω	± 10%	¼ W	15/TM5632
R110	3·3K	± 10%	¼ W	6/TM5632
R111	3·3K	± 10%	¼ W	16/TM5632
R112	3·3K	± 10%	¼ W	16/TM5632
R113	3·3K	± 10%	¼ W	16/TM5632
RV101	5000Ω	± 10%	1W	37/TM5613

REF	CAPACITORS			STOCK LIST
C101	4700 pF			5/TM5273/D
C102	4700 pF			5/TM5273/D
C103	·01 μF	± 20%	400V	40/TM5630
C104	·01 μF	± 20%	400V	40/TM5630
C105	532 PF SWING.			27/TM5630
C106	4700 pF			5/TM5273E
C107	4700 pF			5/TM5273E
C108	4700 pF			5/TM5273E
C109	4700 pF			5/TM5273E
C110	62 pF	± 10%	500V	21/TM5632
C111	3–19·5 PF AIR TRIMMER			4/TM5633
C112	47 pF	± 10%	500V	20/TM5632
C113	22 pF	± 10%	500V	24/TM5632
C114	3–19·5 PF AIR TRIMMER			4/TM5633
C115	22 pF	± 10%	500V	24/TM5632
C116	3–19·5 PF AIR TRIMMER			4/TM5633
C117	62 pF	± 10%	500V	21/TM5632
C118	3–19·5 PF AIR TRIMMER			4/TM5633

REF				STOCK LIST
C119	300 pF	± 20%	600V	22/TM5632
C120	3–19·5 PF AIR TRIMMER			4/TM5633
C121	300 pF	± 20%	600V	22/TM5632
C122	3–19·5 PF AIR TRIMMER			4/TM5633
C123	300 pF	± 20%	600V	22/TM5632
C124	3–19·5 PF AIR TRIMMER			4/TM5633
C125	390 pF	± 10%	750V	23/TM5632
C126	390 pF	± 20%	600V	23/TM5632
C128	150 pF	± 10%	750V	24/TM5632

REF		STOCK LIST
L101	COIL	7/TM5273/E
L102	COIL	2/TM5273/E
L103	COIL	4/TM5633/1
L104	COIL	7/TM5273/E
L105	COIL	4/TM5633/3
L106	COIL	4/TM5633/4
L107	COIL	7/TM5273/E
L108	COIL	4/TM5633/2

REF		STOCK LIST
L101	COIL	TM 5633/1
L110	COIL	4/TM5633/8
V101	VALVE 5763	39/TF1246
SK101	CO-AX SOCKET	4/TM5632
PL101	PILOT LAMP	34/TF1246
PLP101	PLUG	34/TF1246
SW101	TOGGLE	34/TF1246

2

TITLE	CIRCUIT DIAGRAM FOR 40 Kc/s TO 50 Mc/s OSCILLATOR
DRAWN K.H.W.	ASSY. TC 27396
DATE 4.7.57	WIRING
CHKD.	S. LIST
APP.	DRG. Nº TC 27396
TRACED	

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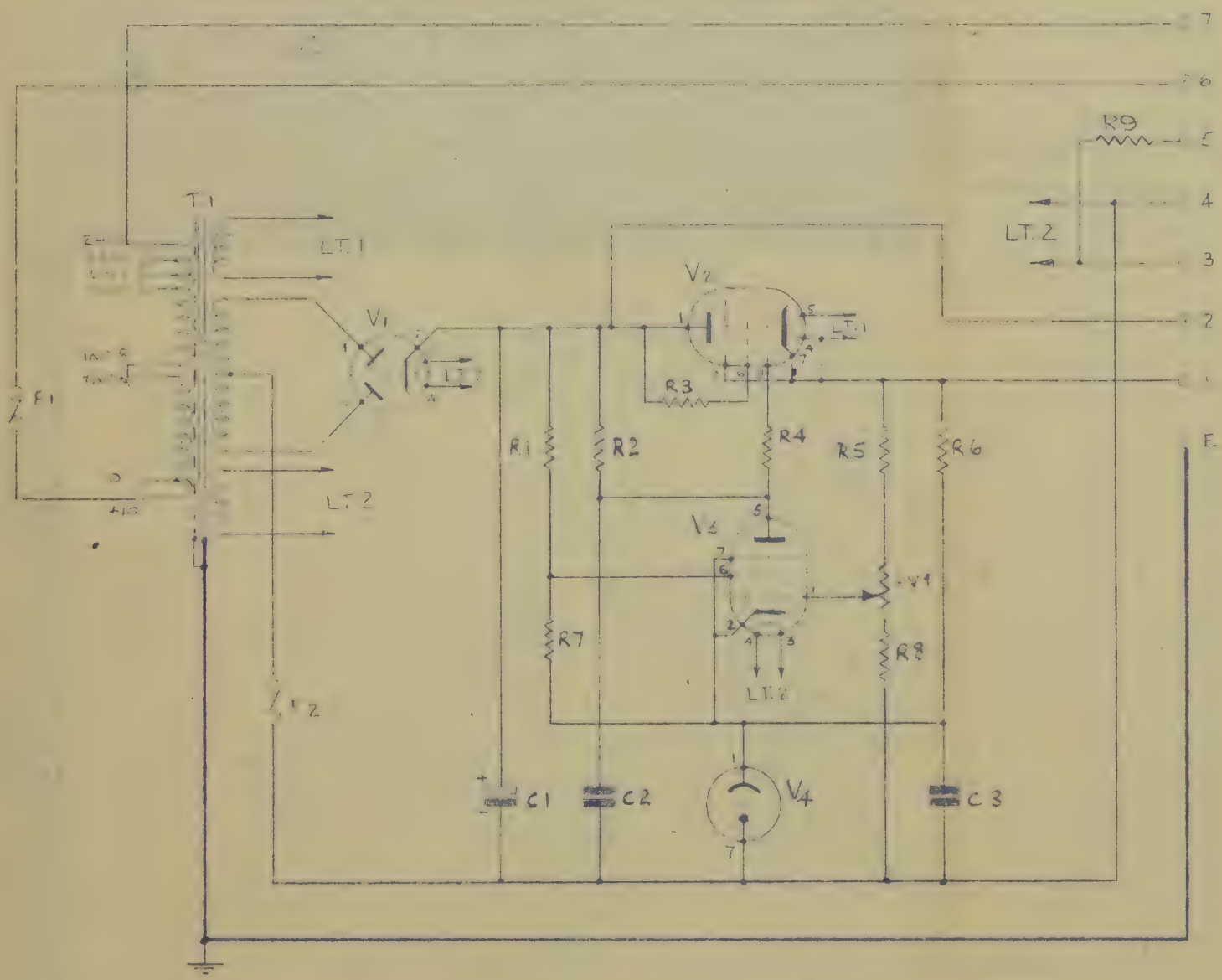

REF		STOCK
K1	± 10%	1/4 W 32/TM 5631
R2		1/4 W 31/TM 5631
		1/4 W
		1/4 W
		1/4 W 30/TM 5631
		1/4 W 33/
		1/2 W
		1/2 W TM 5631
		1/2 W 38/
		TM 5631

REF		
C1	8 µF ± 20% 450 V ELECT.	TM 5631
C2	pF	40/
C3	µF 450 HUNTS N39	44/
V1		MT 246
V2		30, TF
V3		MT

REF	
V4	
T1	TRANSFORMER
T2	TAG STUD
F1	
F.H.	

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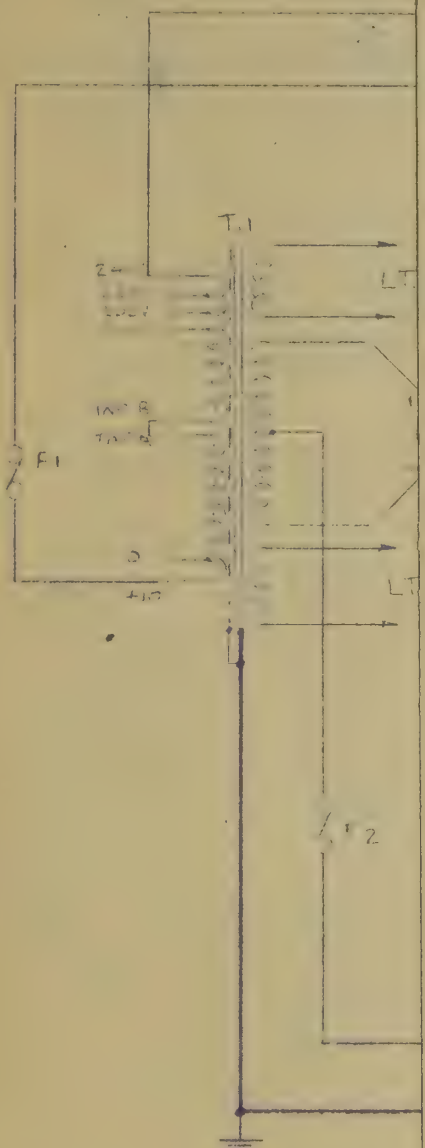

TITLE	POWER UNIT
DRAWN	K.H.W.
ASSY.	ID 2T435
DATE	5-12-57
WIRING	—
CHKD.	
S. LIST	
APP.	
DRG. Nº	TC 21437
TRACED	

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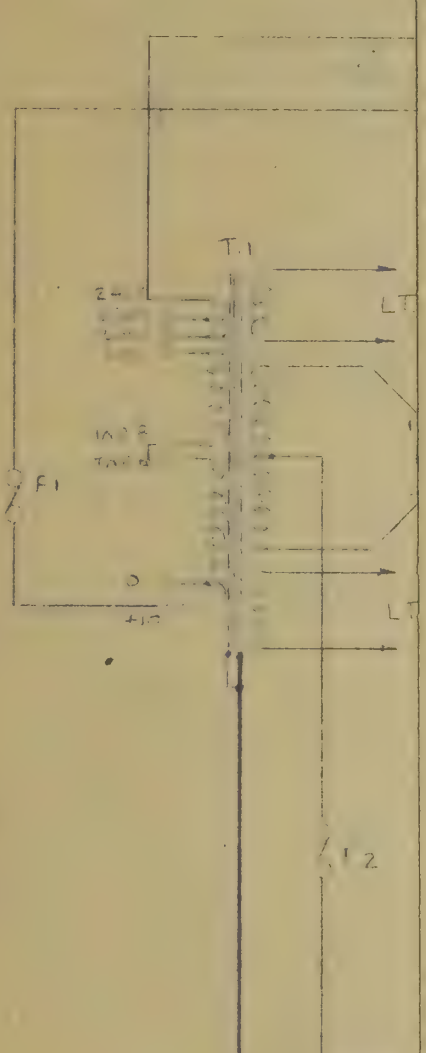
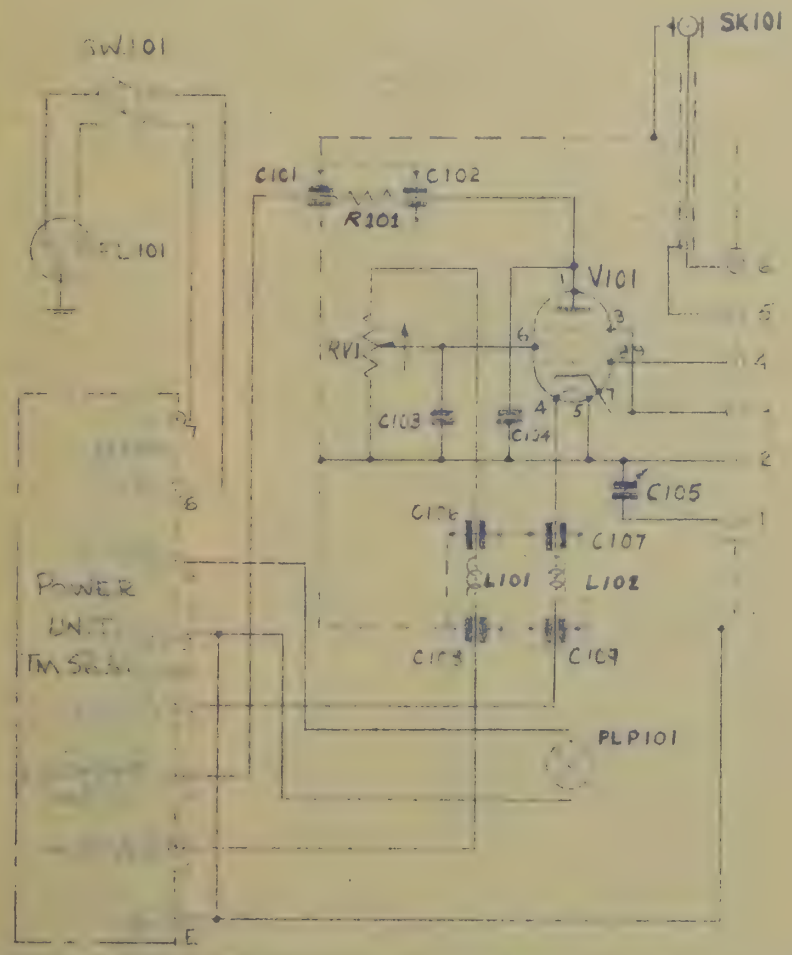
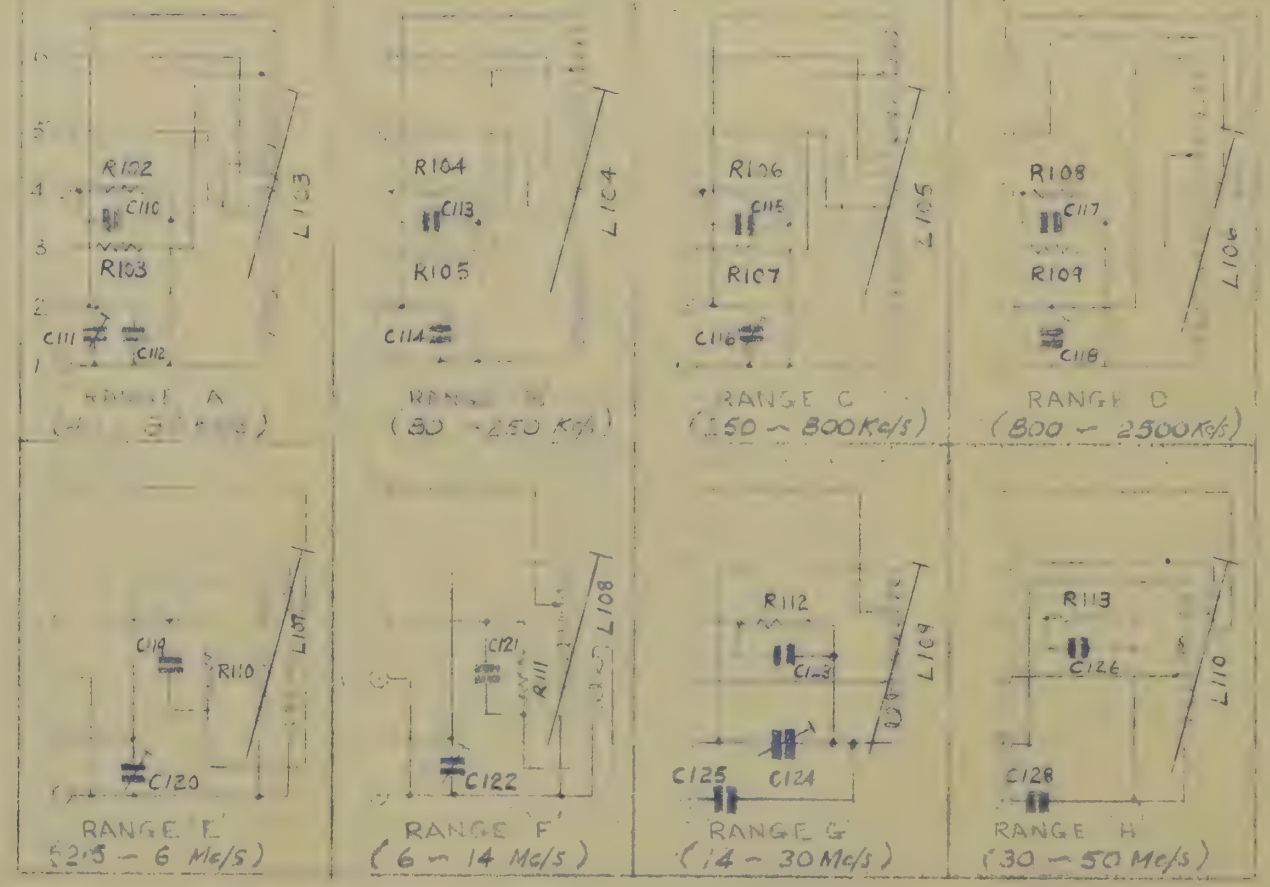


STOCK LIST
41/ [illegible]
1/TM5631
18/TM5631
60/TM5631

TITLE POWER UNIT	
DRAWN K.H.V.	ASSY. [illegible]
DATE 5-12-57	WIRING —
CHKD.	S. LIST [illegible]
APP.	DRG. Nº [illegible]
TRACED	

MARCONI INSTRUMENTS LTD.





REF				STOCK LIST
R101	4·7K	± 10%	1 W	2/TM5633/0
R102	100K	± 10%	½ W	12/TM5632
R103	330Ω	± 10%	½ W	13/TM5632
R104	100K	± 10%	¼ W	12/TM5632
R105	330Ω	± 10%	¼ W	13/TM5632
R106	100K	± 10%	¼ W	12/TM5632
R107	220Ω	± 10%	¼ W	14/TM5632
R108	100K	± 10%	¼ W	12/TM5632
R109	330Ω	± 10%	¼ W	15/TM5632
R110	33K	± 10%	¼ W	16/TM5632
R111	3·3K	± 10%	¼ W	16/TM5632
R112	3·3K	± 10%	¼ W	16/TM5632
R113	3·3K	± 10%	¼ W	16/TM5632
RV101	5000Ω	± 10%	1 W	37/TM5633

REF	CAPACITORS			STOCK LIST
C101	4700 pF			40/TM5630
C102	4700 pF			40/TM5630
C103	·01 µF	± 20%	400V	27/TM5630
C104	·01 µF	± 20%	400V	5/TM5273/E
C105	532 PF SWING			5/TM5273/B
C106	4700 pF			5/TM5273/E
C107	47 pF			5/TM5273/E
C108	47 pF			
C109	47 pF			21/TM5632
C110	22 pF	± 10%	500V	4/TM5633
C111	3-19·5 PF AIR TRIMMER			20/TM5632
C112	47 pF	± 10%	500V	6/TM5632
C113	22 pF	± 10%	500V	4/TM5633
C114	3-19·5 PF AIR TRIMMER			21/TM5632
C115	22 pF	± 10%	500V	4/TM5633
C116	3-19·5 PF AIR TRIMMER			21/TM5632
C117	22 pF	± 10%	500V	4/TM5633
C118	3-19·5 PF AIR TRIMMER			21/TM5632

REF		STOCK LIST
C119	300 pF ± 20% 600V	22/TM5632
C120	3-19·5 PF AIR TRIMMER	4/TM5633
C121	300 pF ± 20% 600V	22/TM5632
C122	3-19·5 PF AIR TRIMMER	4/TM5633
C123	300 pF ± 20% 600V	22/TM5632
C124	3-19·5 PF AIR TRIMMER	4/TM5633
C125	150 pF ± 10% 750V	23/TM5632
C126	3-19·5 PF AIR TRIMMER	23/TM5632
C128	150 pF ± 10% 750V	24/TM5632

REF		STOCK LIST
L101	COIL	1/TM5273/E
L102	COIL	2/TM5273/E
L103	COIL	1/TM5633/1
L104	COIL	1/TM5633/2
L105	COIL	1/TM5633/3
L106	COIL	1/TM5633/4
L107	COIL	1/TM5633/5
L108	COIL	1/TM5633/6
L109	COIL	1/TM5633/7
L110	COIL	1/TM5633/8
V101	VALVE 6AK5	39/TF1246
SK101	CO-AX SOCKET	1/TM5633
PL101	PLUG MAINS	SWITCH
PLP101	PLUG	4
SW101	SWITCH	1/TM5633

TITLE	CIRCUIT DIAGRAM FOR 4·2K ~ 50 Mc/s OSCILLATOR
DRAWN	K.H.W.
DATE	4-11-57
CHKD.	
APP.	
TRACED	
ASSY.	TF 1246
	WIRING
	S. LIST VARIOUS
DRG. Nº	TC 2736

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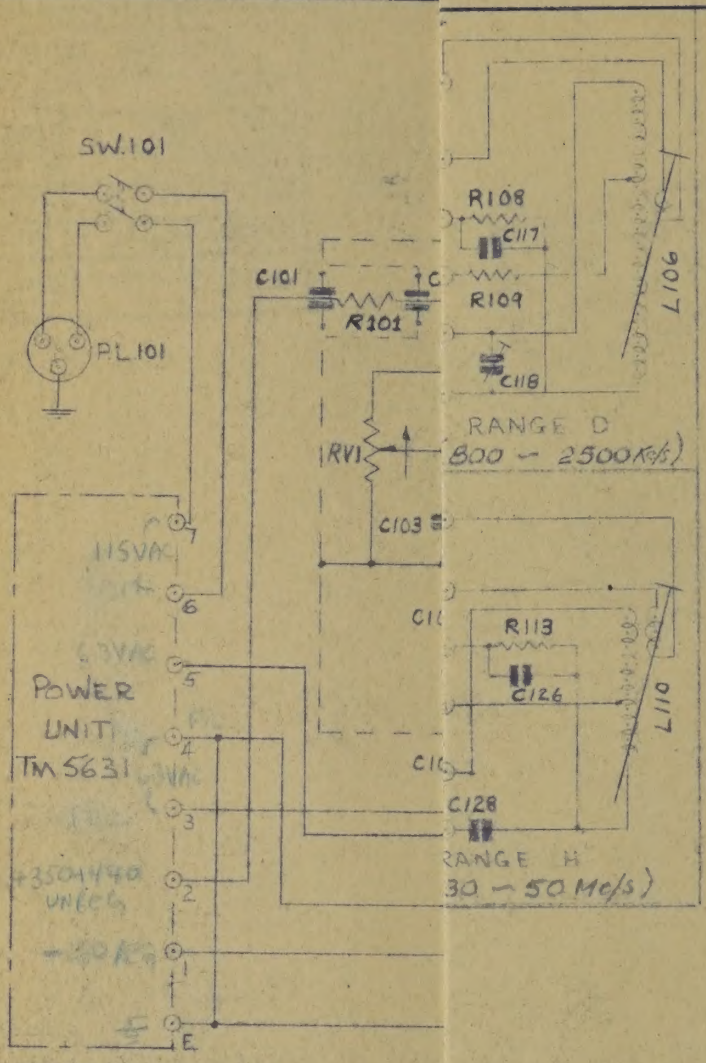

REF	RESISTORS			STOCK LIST
R101	4·7K	± 10%	10W	22/TM5632
R102	100K	± 10%	¼W	4/TM5633
R103	330Ω	± 10%	¼W	22/TM5632
R104	100K	± 10%	¼W	4/TM5633
R105	330Ω	± 10%	¼W	22/TM5632
R106	100K	± 10%	¼W	4/TM5633
R107	220Ω	± 10%	¼W	23/TM5632
R108	100K	± 10%	¼W	22/TM5632
R109	33Ω	± 10%	¼W	24/TM5632
R110	3·3K	± 10%	½W	
R111	3·3K	± 10%	½W	
R112	3·3K	± 10%	½W	1/TM5273/E
R113	3·3K	± 10%	½W	2/TM5273/E
				½TM5633/1
				½TM5633/2
				½TM5633/3
RV101	50,000Ω	± 10%	1W	½TM5633/4
				½TM5633/5
				½TM5633/6

REF		STOCK LIST
L109	COIL	½TM5633/7
L110	COIL	½TM5633/8
V101	VALVE 5763	39/TF1246
SK101	CO-AX. SOCKET	29/TM5630
PL101	PLUG MAINS	36/TF1246
PLP101	LAMP	17/TF1246
SW101	SWITCH	18/TF1246

2

TITLE CIRCUIT DIAGRAM FOR 40Kc/s TO 50Mc/s OSCILLATOR	
DRAWN K.H.W.	ASSY. TE 27390
DATE 4-12-57	WIRING
CHKD.	S. LIST VARIOUS
APP.	DRG. Nº TC 27396
TRACED	

MARCONI INSTRUMENTS LTD.